

**REMARKS**

Claims 1-12 and 14-20 are pending in the application with claims 1, 7, 14, 19, and 20 being the independent claims. Claim 13 is canceled without prejudice to or disclaimer of the subject matter therein. Claims 1, 7, 14, 19, and 20 are amended.

**Allowable Subject Matter**

The Office Action indicated that claims 14 and 19 contain allowable subject matter, but are objected to as being dependent upon a rejected base claim. Applicant has rewritten claims 14 and 19 in independent form to include all the features of their base claim. Therefore, claims 14 and 19 should be in a condition for allowance.

**Rejections under 35 U.S.C. § 102**

The Office Action indicated that claims 1, 2, 5-7, 10, 16, 17, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,662,459 to Bodine (“the ’459 patent”). The Office Action also indicated that claims 1, 3, 4, 7-9, 13, 15, 17, 18, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,266,619 to Bodine (“the ’619 patent”). In addition, the Office Action indicated that claims 1, 7, 8, 15, 17, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 2002/0121378 to Zheng et al. (“Zheng”). Finally, the Office Action indicated that claims 7 and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,408,670 to Schoeffler.

**Claims 1, 7, and 20**

Claim 1 is directed to an apparatus for imparting mechanical vibration on a down-hole drilling system; claim 7 is directed to an energy accelerator for imparting energy to a down-hole drilling member; and claim 20 is directed to a down-hole drilling system. Claim 1, as a representative claim, is reproduced below:

*An apparatus for imparting mechanical vibration on a down-hole drilling system, comprising:*

*a body having ports configured to pass fluid through the body;*

*first and second couplers configured to couple the body to the down-hole drilling system; and*

*a rotating member located at least partially in the body and rotatable about an axis of rotation in response to flow of the fluid, wherein rotation of the rotating member generates mechanical vibration imparted on the down-hole drilling system,*

*wherein an interior surface of the body comprises a first lobed geometry having a first number of lobes and wherein an exterior surface of the rotating member comprises a second lobed geometry having a second number of lobes, the second number of lobes being not greater than the first number of lobes.*

Each of claims 1 and 20 recite, among other things, “an interior surface of the body comprises a first lobed geometry having a first number of lobes and wherein an exterior surface of the rotating member comprises a second lobed geometry having a second number of lobes, the second number of lobes being not greater than the first number of lobes.” Claim 7 recites similar subject matter, reciting a vibrating member in place of the rotating member. Original claim 13, cancelled from the application, recited the lobe feature. Claim 13 stood rejected under only the ’619 patent.

The Office Action states that Fig. 9 of the ’619 patent discloses an interior surface “having a number of lobes equal to a number of lobes on the exterior of the vibrating member.” See Office Action, page 3. However, there is no disclosure in the ’619 patent of a number of lobes. The ’619 patent does disclose a screw type rotor (22). But there is no indication that the screw type rotor includes lobes. In the absence of lobes, the ’619 patent cannot anticipate any of

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amended claims 1, 7, and 20. Accordingly, claims 1, 7, and 20 are not anticipated by the '619 patent.

Further, none of the '459 patent, Zheng, or Schoeffler discloses such features. In the Office Action, none of the '459 patent, Zheng, or Schoeffler was applied to reject original claim 13, reciting lobes, although the '459 patent, Zheng, and Schoeffler were each applied to reject claim 7, from which original claim 13 depended. Therefore, the '459 patent, Zheng, and Schoeffler did not include the subject matter of original claim 13, and do not include the subject matter of amended claims 1, 7, and 20. Therefore, claims 1, 7, and 20 should be allowable over the '459 patent, Zheng, and Schoeffler. Accordingly, Applicant respectfully requests that the Examiner allow claims 1, 7, and 20.

Claims 2-6, 8-12, and 15-18 depend from and add additional features to independent claims 1 and 7. Therefore, these claims should be allowable for at least the reasons that the independent claims are allowable. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection and allow these claims.

### **Conclusion**

For at least the reasons set forth above, independent claims 1, 7, 14, 19, and 20 should be in condition for allowance. Dependent claims 2-6, 8-12, and 15-18 depend from and add additional features to the independent claims and, therefore, also should be in condition for allowance. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejections and issue a formal notice of allowance.

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Please grant any extension of time required to enter this response and charge any additional required fees to our Deposit Account No. 08-1394.

Respectfully submitted,



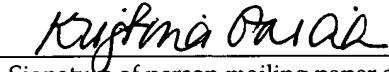
David M. O'Dell  
Registration No. 42,044

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HAYNES AND BOONE, LLP  
901 Main Street, Suite 3100  
Dallas, Texas 75202-3789  
Telephone: 972/739-8635  
Facsimile: 214/651-5940  
Client Matter No.: 27735.20  
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